Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-16 (canceled).

Claim 17 (original): An apparatus for performing a hierarchy coding comprising:

means for extracting a plurality of pixels of image data of a first hierarchy and generating class information corresponding to characteristics of the extracted plurality of pixels;

means for storing mapping coefficients for each class; and

means for reading mapping coefficients corresponding to the class information and predicting image data of a second hierarchy using the image data of the first hierarchy and the read mapping coefficients, the image data of the second hierarchy having a number of pixels which is smaller than that of the image data of the first hierarchy.

Claim 18 (original): An apparatus according to claim 17, wherein said predicting means includes:

means for extracting a plurality of pixels from the image data of the first hierarchy; and

means for predicting the image data of the second hierarchy where a number of pixels of the image data of the first hierarchy is reduced, based upon the extracted plurality of pixels and the read mapping coefficients.

Claim 19 (original): An apparatus according to claim 17, wherein the mapping coefficients for each class are generated using an image data for learning.

Claim 20 (previously presented): An apparatus according to claim 17, wherein the mapping coefficients for each class are generated so that a predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum.

Claim 21 (original): An apparatus according to claim 17, wherein the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is less than a prescribed threshold value.

Claim 22 (previously presented): An apparatus according to claim 17, wherein the mapping for each class is generated by the steps of:

extracting a plurality of pixels of image data of a first hierarchy for learning and generating class information corresponding to the characteristics of the extracted plurality of pixels;

predicting image data of the second hierarchy where a number of pixels for the image data of the first hierarchy for learning is reduced using the image data of the first hierarchy for learning and mapping coefficients corresponding to the class information;

predicting the image data of the first hierarchy for learning in accordance with the image data of the second hierarchy and generating predicted data having a plurality of predicted pixels;

generating a predicted error of the predicted data of the image of the first hierarchy for learning with respect to the image data of the first hierarchy for learning;

updating the mapping coefficients in accordance with the predicted error until the mapping coefficients are optimum mapping coefficients; and

determining the optimum mapping coefficients.

Claim 23 (previously presented): An apparatus according to claim 17, wherein the mapping for each class is generated by the steps of:

forming an image data of the second hierarchy having a number of pixels that is smaller than that of an image data of the first hierarchy for learning;

correcting the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy for learning in accordance with the corrected data and generating a predicted data of the first hierarchy for learning having a plurality of predicted pixels;

calculating a predicted error of the predicted data of the first hierarchy for learning with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error;

repeating the correcting step until the corrected data is an optimum corrected data; and

generating optimum mapping coefficients for each class using the image data of the first hierarchy for learning and the optimum corrected data.

Claim 24 (previously presented): An apparatus for decoding a coded data hierarchical coding an image data comprising:

means for receiving the coded data including at least image data of a second hierarchy, the image data of the second hierarchy having a number of pixels which is smaller than that of an image data of the first hierarchy; and

means for decoding the image data of a first hierarchy from image data of the second hierarchy, said coded data generated by the steps of:

extracting a plurality of pixels of an image data of a first hierarchy and generating class information corresponding to characteristics of the extracted plurality of pixels; and

reading mapping coefficients corresponding to the class information from a memory in which mapping coefficients for each class are stored and predicting an image data of the second hierarchy using the image data of the second hierarchy having a number of pixels which is smaller than that of the image data of the first hierarchy.

Claim 25 (original): An apparatus according to claim 24, wherein said decoding means includes:

memory for storing predicted coefficients for each class used to generate the mapping coefficients for each class;

means for extracting a plurality of pixels of the image data of the second hierarchy and generating class information corresponding to the extracted plurality of pixels; and

means for reading predicted coefficients corresponding to the class information and predicting a decoded image data of a first hierarchy using the image data of the second hierarchy and the read predicted coefficients.

Claim 26 (original): An apparatus according to claim 25, wherein the predicted coefficients for each class are generated using an image data for learning.

Claim 27 (original): An apparatus according to claim 24, wherein the mapping coefficients for each class are generated using an image data for learning.

Claim 28 (original): An apparatus according to claim 24, wherein the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning is predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum.

Claim 29 (original): An apparatus according to claim 24, wherein the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning is predicted using image data of the second hierarchy and the image data of the first hierarchy for learning is less than prescribed threshold values.

Claims 30-62 (canceled)

Claim 63 (original): A method of performing a hierarchy coding comprising:

extracting a plurality of pixels of image data of a first hierarchy and generating class information corresponding to characteristics of the extracted plurality of pixels;

storing mapping coefficients for each class; and

reading mapping coefficients corresponding to the class information and predicting image data of a second hierarchy using the image data of the first hierarchy and the read mapping coefficients, the image data of the second hierarchy having a number of pixels which is smaller than that of the image data of the first hierarchy.

Claim 64 (original): A method according to claim 63, wherein said predicting step includes:

extracting a plurality of pixels from the image data of the first hierarchy; and

predicting the image data of the second hierarchy where a number of pixels of the image data of the first hierarchy is reduced, based upon the extracted plurality of pixels and the read mapping coefficients.

Claim 65 (original): A method according to claim 63, wherein the mapping coefficients for each class are generated using an image data for learning.

Claim 66 (previously presented): A method according to claim 63, wherein the mapping coefficients for each class are generated so that a predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum.

Claim 67 (original): A method according to claim 63, wherein the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is less than a prescribed threshold value.

Claim 68 (previously presented): A method according to claim 63, wherein the mapping for each class is generated by the steps of:

extracting a plurality of pixels of image data of a first hierarchy for learning and generating class information corresponding to the characteristics of the extracted plurality of pixels;

predicting image data of the second hierarchy where a number of pixels for the image data of the first hierarchy is greater than a number of pixels for the image data of the second hierarchy using the image data of the first hierarchy and mapping coefficients corresponding to the class information;

predicting the image data of the first hierarchy in accordance with the image data of the second hierarchy and generating predicted data having a plurality of predicted pixels;

generating a predicted error of the predicted data of the image of the first hierarchy with respect to the image data of the first hierarchy;

updating the mapping coefficients in accordance with the predicted error until the mapping coefficients are optimum mapping coefficients; and

determining the optimum mapping coefficients.

Claim 69 (previously presented): A method according to claim 63, wherein the mapping for each class is generated by the steps of:

forming image data of the second hierarchy having a number of pixels that is smaller than that of image data of the first hierarchy;

correcting the image data of the second hierarchy and generating corrected data;

predicting the image data of the first hierarchy in accordance with the corrected data and generating predicted data of the first hierarchy having a plurality of predicted pixels;

calculating a predicted error of the predicted data of the first hierarchy with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error;

repeating the correcting step until the corrected data is optimum; and

generating optimum mapping coefficients for each class using the image data of the first hierarchy and the optimum corrected data.

Claim 70 (previously presented): A method of decoding a coded data hierarchical coding an image data comprising: receiving the coded data including at least image data of a second hierarchy, the image data of the second hierarchy having a number of pixels which is, smaller than that of an image data of a first hierarchy; and

decoding the image data of the first hierarchy from image data of the second hierarchy, said coded data generated by the steps of:

extracting a plurality of pixels of an image data of a first hierarchy and generating class information corresponding to characteristics of the extracted plurality of pixels; and

reading mapping coefficients corresponding to the class information from a memory in which mapping coefficients for each class are stored and predicting an image data of the second hierarchy using the image data of the second hierarchy having a number of pixels which is smaller than that of the image data of the first hierarchy.

Claim 71 (original) A method according to claim 70, wherein said decoding step includes:

extracting a plurality of pixels of the image data of the second hierarchy and generating class information corresponding to the extracted plurality of pixels; and

reading from a memory predicted coefficients corresponding to the class information and predicting a decoded image data of a first hierarchy using the image data of the second hierarchy and the read predicted coefficients.

Claim 72 (original): A method according to claim 71, wherein the predicted coefficients for each class are generated using an image data for learning.

Claim 73 (previously presented): A method according to claim 70, wherein the mapping coefficients for each class are generated using an image data for learning.

Claim 74 (previously presented): A method according to claim 70, wherein the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum.

Claim 75 (previously presented): A method according to claim 70, wherein the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning predicted using image data of the second hierarchy and the image data of the first hierarchy for learning is less than prescribed threshold values.

Claims 76-122 (canceled)

Claim 123 (previously presented): A method of transmitting hierarchically coded image data, the method comprising:

receiving the hierarchically coded image data, and

transmitting the hierarchically coded image data, wherein the hierarchically coded image data has been formed by steps of:

extracting a plurality of pixels of image data of a first hierarchy and generating class information corresponding to characteristics of the extracted plurality of pixels;

storing mapping coefficients for each class; and

reading mapping coefficients corresponding to the class information and predicting image data of a second hierarchy using the image data of the first hierarchy and the read mapping coefficients, the image data of the second hierarchy having a number of pixels which is smaller than that of the image data of the first hierarchy.

Claim 124 (original): The method according to claim 123, wherein said predicting step includes:

extracting a plurality of pixels from the image data of the first hierarchy; and predicting the image data of the second hierarchy where a number of pixels of the image data of the first hierarchy is reduced, based upon the extracted plurality of pixels and the read mapping coefficients.

Claim 125 (original): The method according to claim 123, wherein the mapping coefficients for each class are generated using an image data for learning.

Claim 126 (previously presented): The method according to claim 123, wherein the mapping coefficients for each class are generated so that a predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum

Claim 127 (original): The method according to claim 123, wherein the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is less than a prescribed threshold value.

Claim 128 (previously presented): The method according to claim 123, wherein the mapping for each class is generated by the steps of:

extracting a plurality of pixels of image data of a first hierarchy for learning and generating class information corresponding to the characteristics of the extracted plurality of pixels;

predicting image data of the second hierarchy where a number of pixels for the image data of the first hierarchy for learning is greater than a number of pixels for the image data of the second hierarchy using the image data of the first hierarchy for learning and mapping coefficients corresponding to the class information;

predicting the image data of the first hierarchy for learning in accordance with the coded image data and generating predicted data having a plurality of predicted pixels;

generating a predicted error of the predicted data of the image of the first hierarchy for learning with respect to the image data of the first hierarchy for learning;

updating the mapping coefficients in accordance with the predicted error until the mapping coefficients are optimum mapping coefficients; and

determining the optimum mapping coefficients.

Claim 129 (previously presented): The method according to claim 123, wherein the mapping for each class is generated by the steps of:

forming an image data of the second hierarchy having a number of pixels that is smaller than that of an image data of the first hierarchy for learning;

correcting the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy for learning in accordance with the corrected data and generating a predicted data of the first hierarchy for learning having a plurality of predicted pixels;

calculating a predicted error of the predicted data of the first hierarchy for learning with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error;

repeating the correcting step until the corrected data is an optimum corrected data; and

generating optimum mapping coefficients for each class using the image data of the first hierarchy for learning and the optimum corrected data.

Claim 130 (original): An article of manufacture having recorded thereon hierarchically coded image data, the hierarchically coded image data formed by the steps of: extracting a plurality of pixels of image data of a first hierarchy and generating class information corresponding to characteristics of the extracted plurality of pixels; storing mapping coefficients for each class; and reading mapping coefficients corresponding to the class information and predicting image data of a second hierarchy using the image data of the first hierarchy and the read mapping coefficients, the image data of the second hierarchy having a number of pixels which is smaller than that of the image data of the first hierarchy.

Claim 131 (original): The article of manufacture according to claim 130, wherein said predicting step includes:

extracting a plurality of pixels from the image data of the first hierarchy; and predicting the image data of the second hierarchy where a number of pixels of the image data of the first hierarchy is reduced, based upon the extracted, plurality of pixels and the read mapping coefficients.

Claim 132 (original): The article of manufacture according to claim 130, wherein the mapping coefficients for each class are generated using an image data for learning.

Claim 133 (previously presented): The article of manufacture according to claim 130, wherein the mapping coefficients for each class are generated so that a predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum.

Claim 134 (original): The article of manufacture according to claim 130, wherein the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second

hierarchy and the image data of the first hierarchy for learning is less than a prescribed threshold value.

Claim 135 (previously presented): The article of manufacture according to claim 130, wherein the mapping for each class is generated by the steps of:

extracting a plurality of pixels of image data of a first hierarchy for learning and generating class information corresponding to the characteristics of the extracted plurality of pixels;

predicting image data of the second hierarchy where a number of pixels for the image data of the first hierarchy for learning is greater than a number of pixels for the image data of the second hierarchy using the image data of the first hierarchy for learning and mapping coefficients corresponding to the class information;

predicting the image data of the first hierarchy for learning in accordance with the coded image data and generating predicted data having a plurality of predicted pixels;

generating a predicted error of the predicted data of the image of the first hierarchy for learning with respect to the image data of the first hierarchy for learning;

updating the mapping coefficients in accordance with the predicted error until the mapping coefficients are optimum mapping coefficients; and

determining the optimum mapping coefficients.

Claim 136 (previously presented): The article of manufacture according to claim 130, wherein the mapping for each class is generated by the steps of:

forming an image data of the second hierarchy having a number of pixels that is smaller than that of an image data of the first hierarchy for learning;

correcting the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy for learning in accordance with the corrected data and generating a predicted data of the first hierarchy for learning having a plurality of predicted pixels;

calculating a predicted error of the predicted image data of the first hierarchy for learning with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error;

repeating the correcting operation until the corrected data is an optimum corrected data; and

generating optimum mapping coefficients for each class using the image data of the first hierarchy for learning and the optimum corrected data.

Claim 137 (currently amended): An apparatus for performing a hierarchical coding, comprising:

means for forming an image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

means for correcting the image data of the second hierarchy and generating a corrected data;

means for predicting the image data of the first hierarchy in accordance with the corrected data and generating a predicted data of the first hierarchy having a plurality of predicted pixels;

means for calculating predictive error of the predicted data of the first hierarchy with respect to the image data of the first hierarchy;

means for determining suitability of the corrected data in accordance with the predicted error; and

means for outputting the corrected data as the image data of the second hierarchy in accordance with the determined result.

Claim 138 (previously presented): An apparatus for performing a hierarchical coding; comprising:

means for forming an image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

means for forming an image data of a third hierarchy having a number of pixels which is smaller than that of an image data of the second hierarchy;

means for correcting the image data of the third hierarchy and generating a corrected data of the third hierarchy;

first predicting means for generating a prediction value of the second hierarchy, having a plurality of pixels, in accordance-with the corrected data of the third hierarchy;

second predicting means for generating a prediction value of the first hierarchy, having a plurality of pixels, in accordance with the prediction value of the second hierarchy;

error generating means for generating a predicted error of the prediction value of the first hierarchy with respect to the image data of the first hierarchy;

means for determining suitability of the corrected data of the third hierarchy in accordance with the predicted error; and

means for outputting the corrected data as the image data of the third hierarchy in accordance with the determined result.

Claim 139 (previously presented): A method of performing a hierarchical coding, comprising:

forming an image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

correcting the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy in accordance with the corrected data and generating a predicted data of the first hierarchy having a plurality of predicted pixels;

calculating a predicted error of the predicted data of the first hierarchy with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error; and

outputting the corrected data as the image data of the second hierarchy in accordance with the determined result.

Claim 140 (previously presented): A method of decoding data represented by a hierarchical coding of an image, comprising:

receiving the coded data including at least image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

decoding the image data of the first hierarchy from image data of the second hierarchy by steps of:

forming the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy in accordance with the corrected data and generating a predicted data of the first hierarchy having a plurality of predicted pixels;

calculating a predicted error of the predicted data of the first hierarchy with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error;

repeating the step of generating corrected data as necessary until the corrected data becomes an optimum corrected data; and

outputting the optimum corrected data as the image data of the second hierarchy.

Claim 141 (currently amended): A method of performing a hierarchical coding, comprising:

forming an image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

forming an image data of a third hierarchy having a number of pixels which is smaller than that of an image data of the second hierarchy;

correcting the image data of the third hierarchy and generating a corrected data of the third hierarchy;

~~first predicting step for generating a prediction value of the first hierarchy, having a plurality of pixels, in accordance with the prediction value of the second hierarchy;~~

first predicting step for generating predicted data of the second hierarchy, having a plurality of pixels, in accordance with the corrected data of the third hierarchy;

second predicting step for generating a prediction value of the first hierarchy, having a plurality of pixels, in accordance with the prediction value of the second hierarchy;

error generating step for generating a predicted error of the prediction value of the first hierarchy with respect to the image data of the first hierarchy;

determining suitability of the corrected data of the third hierarchy in accordance with the predicted error; and

outputting the corrected data as the image data of the third hierarchy in accordance with the determined result.

Claim 142 (canceled)